Claims 1-19 are currently under examination in the application. Claims 1-19 are rejected. Reconsideration of claims 1-19 is respectfully requested. Consideration of new claims 20 and 21 is respectfully requested.

Amended Claims

Claim 1 is amended to add the limitation that the predefined number of vacant wavelengths leading to a buffered destination is "greater than one."

Claim 2 is amended to add the limitation that "the switch monitors to detect a number of vacant wavelengths at the switch outputs being greater than or equal to the predefined number."

Claim 4 is amended to remove the indefinite phrase "of other lengths" and clarify that "at least one data packet with a length within a first range is associated with a first queue, a further data packet with a length within a second range is associated with a second queue, and a still further data packet with a length within a third range is associated with a third queue."

Claim 5 is amended to clarify that "the buffer unit has inputs with data originating from lines external to the switch."

Claim 6 is amended to clarify that "the lines external to the switch are aggregation inputs."

Claim 7 is amended to clarify that "the buffer unit has an input and the data, at the buffer unit input is routed from a one or more switch inputs."

Claim 13 is amended to add the limitation of the predefined number of vacant wavelengths leading to a buffered packets destination "being at least two."

Claim 14 is amended to add a limitation and clarify that the method is further defined "by monitoring to schedule data from the buffer unit to an output of the switch upon a number of vacant wavelengths at the output of the switch being at least the predefined number."

Claim 19 is amended to clarify that "the method further comprises associating a length of each data packet with a one of a predefined number of ranges of data packet lengths where each range is associated with a specific queue."

Claim 20 is newly added, to add that "the predefined number of vacant wavelengths is specific to each specific queue." Support for claim 20 is found in the specification on page 7, lines 21-22, as discussed below regarding claim 1.

Claim 21 is newly added, to add that the switch further comprises "a plurality of queues in the buffer unit, each queue being associated with a distinct range of data packet lengths, the predefined number of vacant wavelengths being characteristic to each queue." Support for claim 21 is found in the specification on page 7, lines 21-22, as discussed below regarding claim 1.

Rejections Under 35 USC §112

Claims 4, 5, 6, 7 and 19 were rejected under 35 U.S.C. §112 as being indefinite.

Claim 4 is amended to remove the indefinite phrases "other lengths", "an arbitrary number of ranges" and multiple differing references to "packets of data." The several data packets and associated

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ranges and queues are each uniquely and thus distinguishably described in amended claim 4 as "at least one data packet with a length within a first range is associated with a first queue, a further data packet with a length within a second range is associated with a second queue, and a still further data packet with a length within a third range is associated with a third queue." Since the data packets, ranges and queues in amended claim 4 are well-defined and indefinite phrases have been removed, amended claim 4 is no longer indefinite and is allowable.

Claim 5 was rejected as reciting the limitation "the buffer unit input" with insufficient antecedent basis in the claim. Claim 5 is amended to establish proper antecedent basis for inputs to the buffer, as "the buffer unit has inputs with data originating from lines external to the switch." Having proper antecedent basis, amended claim 5 is thus allowable.

Claim 6 was rejected as reciting the term "low bit rate" without definition in the claim nor a standard in the specification for ascertaining the requisite degree. Amended claim 6 removes the term "low bit rate" and the term "namely metro access rings", and recites "the lines external to the switch are aggregation inputs." The term "the lines external to the switch" has proper antecedent basis in claim 5, from which claim 6 depends. Support for the definite term "aggregation inputs" as identified for "the lines external to the switch" is found in the specification, page 10 lines 27-34:

> ... a system comprising a media access protocol for accessing an asynchronous (metro) packet ring. Following this approach, one will realize that, the only difference in principle is that the packets or databursts will be routed from external lines and directly to the number of buffers. More specifically the input to the buffers will be low bit rate lines - aggregating inputs - which will be aggregated in different queues to the switch' outputs.

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Claim 7 was rejected as reciting the limitation "the buffer unit input" with insufficient antecedent basis in the claim. Claim 7 is amended to establish proper antecedent basis for an input to the buffer, as "the buffer unit has an input and the data, at the buffer unit input is routed from a one or more switch inputs." Having proper antecedent basis, claim 7 is thus allowable.

Claim 19 was rejected as reciting the limitations "other lengths" and "each range" with insufficient antecedent basis. Amended claim 19 establishes proper antecedents for "a length" and "ranges", as "the method further comprises associating a length of each data packet with a one of a predefined number of ranges of data packet lengths where each range is associated with a specific queue." As recited, "a length" is introduced as belonging to "each data packet", and "each range" is a range of data packet lengths, from the earlier introduced "a predefined number of ranges of data packet lengths." The indefinite term "an arbitrary" is replaced by the definite term "a predefined", as applied to the term "number of ranges." Having proper antecedent basis and definite terms, claim 19 is thus allowable.

Rejections Under 35 USC §103

Claims 1, 2 and 5-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lee et al. (US 2004/0151171 A1) in view of Heinz et al. (US 2003/0076846).

Regarding claim 1, Lee and Heinz are cited in combination as teaching switches in networks, having one or more buffers operating so as to buffer until an available wavelength channel exists. A standard network buffer operates so as to buffer until at least one wavelength is vacant, in order to prevent data collisions.

Amended claim 1 recites, "the buffer unit buffers the data until a predefined number, greater than one, of wavelengths leading to a buffered destination is vacant." The "predefined number... of wavelengths" is thus a whole number equaling two or more, which differs from the requirement of Lee, Heinz or a standard network buffer needing only one available wavelength channel.

Simulations performed by Applicant, and described in the specification, show a reduction in Packet Loss Ratio (PLR) when the buffer unit of Applicant buffers the data until a predetermined number of wavelengths leading to a buffered destination is vacant, for a predetermined number of two or greater as compared with the unimproved case of waiting until one wavelength is vacant, as taught by Lee and Heinz. Lee and Heinz are silent as to Packet Loss Ratio or any method or device to improve Packet Loss Ratio. The references do not teach using any number other than "one" for the minimum predefined number of vacant wavelengths. The references do not provide any suggestion or motivation to use a number greater than or equal to two for the minimum predefined number of vacant wavelengths, nor do the references teach a reduction in Packet Loss Ratio for doing so.

The "predefined number of wavelengths" of Applicant is a system or method parameter, determined and specified for a given implementation of the switch or method in the claims. Examples are given in the specification of this "number of minimum vacant wavelengths before a queue is serviced" (page 7, lines 21-22) being different values for each of three queues, such as "Wv1 = 5, Wv2 = 7 and Wv3 = 10" (page 8, line 2). In Lee, Heinz, and Ohba as well, the minimum number of vacant wavelengths for scheduling a buffered packet is always a fixed number of "one."

The optical router of Lee has a buffer (129, Fig. 4) for each wavelength from a switch (128, Fig. 4) and does not allow pass through,

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un-buffered switching. Requiring the optical router of Lee to buffer until two or more wavelengths are vacant would result in dropped packets and an increase in Packet Loss Ratio, the opposite result of the invention of Applicant. There is thus a motivation, deducible by one skilled in the art and relying on the references of Lee and Heinz, to construct and operate a switch that buffers until at least a fixed number *equaling one* of wavelengths leading to a buffered destination is vacant, rather than constructing and operating a patentably distinct switch that "buffers the data until a predefined number, *greater than one*, of wavelengths leading to a buffered destination is vacant", as claimed by Applicant. A person skilled in the art and relying on the references of Lee and Heinz would be motivated away from requiring a predefined number *greater than one* of vacant wavelengths in the construction and operation of a network switch.

Since this predefined number differs between Applicant and Lee in combination with Heinz, and since opposite Packet Loss Ratio results are obtained by applying the predefined number of Applicant to the switch of Lee in combination with Heinz as compared to the switch of Applicant, claim 1 of Applicant is unobvious over the references and allowable.

Regarding claim 2, Applicant acknowledges the switch of Lee monitors vacant wavelengths at the switch outputs. However, the switch of Lee or Lee in combination with Heinz is not a switch that "monitors to detect a number of vacant wavelengths at the switch outputs being greater than or equal to the predefined number," as in amended claim 2, as the "predefined number" differs between Applicant and Lee in combination with Heinz. The switch of Lee in combination with Heinz monitors to detect a minimum of *one* vacant wavelength at the switch output, whereas the switch of Applicant monitors to detect a minimum of a predefined number *greater than one* of vacant wavelengths at the switch outputs. With differing elements from Lee in combination with Heinz, claim 2 of Applicant is unobvious over the references and allowable.

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Regarding claims 5-12, claims 5, 7 and 8 depend from allowable independent claim 1 and are thus allowable. Claims 6, 9 and 10 depend from allowable claim 5 and are thus allowable. Claim 11 depends from allowable claim 7 and is thus allowable. Claim 12 depends from allowable claim 9 and is thus allowable.

Regarding claim 13, the discussion of the switch of independent claim 1 applies as well to the method of claim 13. Amended claim 13 recites "buffering the data in the buffer unit until a predefined number, being at least two, of wavelengths leading to a buffered packets destination is vacant." As discussed regarding claim 1, the "predefined number... of wavelengths" of Applicant is a whole number equaling two or more, which differs from the requirement of Lee, Heinz or a standard network buffer needing only one available wavelength channel, and which produces a reduction in Packet Loss Ratio in the method of Applicant in contrast with an increase in Packet Loss Ratio in the optical router of Lee in combination with Heinz. There is no teaching, suggestion or motivation in Lee or Heinz to build or operate the optical router of Lee or the system of Heinz using a minimum number of vacant wavelengths as anything other than the number "one." It is readily deducible by one skilled in the art and relying on the references of Lee and Heinz that there is a strong motivation to use the minimum number of vacant wavelengths equaling one, as a minimum number greater than one of vacant wavelengths applied to the device or method of Lee in combination with Heinz produces an undesired increase in Packet Loss Ratio. Claim 13 is thus unobvious over the references and allowable.

Regarding claim 14, the discussion of the switch of dependent claim 2 applies as well to the method of dependent claim 14. Applicant acknowledges the method of Lee includes monitoring vacant wavelengths at the switch. However, the method of Lee or Lee in combination with

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Heinz is not a method that is "further defined by monitoring to schedule data from the buffer unit to an output of the switch upon a number of vacant wavelengths at the output of the switch being at least the predefined number," as in amended claim 14, as the "predefined number" differs between Applicant and Lee in combination with Heinz. The method of Lee in combination with Heinz monitors to detect a minimum of *one* vacant wavelength at the switch output, whereas the method of Applicant monitors to schedule data from the buffer unit to an output of the switch upon a minimum of a predefined number *being at least two* of vacant wavelengths at the switch output. With differing elements from Lee in combination with Heinz, claim 14 of Applicant is unobvious over the references and allowable.

Regarding claim 15, claim 15 depends from allowable claim 13 and is thus allowable.

Claims 3, 4 and 16-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lee and Heinz further in view of Ohba (US 6,101,193). Applicant acknowledges that Ohba teaches classifying data packets by packet length, to suppress the burstiness of traffic and improve fairness characteristics.

Regarding claims 3-4, as claim 3 depends from allowable claim 1 and as claim 4 depends from claim 3, claims 3-4 are thus allowable.

Regarding claims 16-18, as claims 16, 17 and 18 depend from allowable claim 13, claims 16-18 are thus allowable.

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Conclusion

Applicant requests Reconsideration and a Notice of Allowance.

The Examiner is invited to contact the undersigned with any comments or questions at 408-297-9733 between 9:00 AM and 5:00 PM PST.

Respectfully submitted,

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